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Cc: Frank.Flak, James.Fargher
Sent: Saturday, [REDACTED] 12:27pm ET
Subject: CAPS LCP CO2 Results

The results of the PS&E CO2 tests (28mm / 3.0 Gas Volume) on the 28mm short skirt bottle/CAPs closure are in the attached file (as well as comparisons of MLXII and ARO closures on 28mm 1716 finishes). The CAPS linerless ODS closure permeated 0.545 cc-CO2 / day and the CAPS closure with the LCP insert permeated at 0.155 cc-CO2 / day. Based on these results, the CAPS-LCP disk closure is competitive from a CO2 barrier aspect to both the MLXII A/C/D formulations and ARO/punch-in liner...Ticona will provide more LCP film samples for testing on the 38mm CAPS ODS closure (to arrive early next week).

Next Steps:

- 1) 28mm - O2 permeation
- 2) 38mm - CO2 permeation and O2 permeation
- 3) Ticona to deliver resin pricing for review and Keller/Heckmann Opinion letters (under FDA review now for non-objection)

Please advise of questions/concerns/additional actions.

Please remember that all data is confidential.

Phil Bourgeois



28mm Closures

cc-CO2/day

1	Plastic Shell / EVA	Mold-in	0.600
2	Plastic Shell / MLXIIA	Mold-in	0.210
3	Plastic Shell / MLXIIB	Mold-in	0.065
4	Plastic Shell / MLXIIC	Mold-in	0.120
5	Plastic Shell / MLXIID	Mold-in	0.125
6	CAPs ODS	Linerless	0.545
7	CAPs ODS - LCP Disk	Punch-in LCP	0.155
8	ARO / EVA	Punch-in	0.180
9	ARO / TriShield EVA	Punch-in	0.150
10	ARO / Darex	Punch-in	0.160